

SEQUENCE LISTING

<110> Eisenberg, Stephen P.
Case, Casey C.
Cox III, George N.
Jamieson, Andrew
Rebar, Edward J.
Sangamo Biosciences, Inc.

<120> Selection of Sites for Targeting by Zinc Finger
Proteins and Methods of Designing Zinc Finger Proteins
to Bind to Preselected Sites

<130> 019496-001800US

<140> US 09/229,007

<141> 1999-01-12

<160> 97

<170> PatentIn Ver. 2.1

<210> 1

<211> 25

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:exemplary motif
characterizing the C-2H-2 class of zinc finger
proteins (ZFP)

<220>

<221> MOD_RES

<222> (1)..(25)

<223> Xaa = any amino acid

<220>

<221> MOD_RES

<222> (4)..(5)

<223> Xaa = any amino acid, may be present or absent

<220>

<221> MOD_RES

<222> (23)..(24)

<223> Xaa = any amino acid, may be present or absent

<400> 1

Cys Xaa Xaa Xaa Xaa Cys Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa Xaa
1 5 10 15

Xaa Xaa His Xaa Xaa Xaa Xaa His
20 25

<210> 2

<211> 5

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:peptide linker

<400> 2

Thr Gly Glu Lys Pro
1 5

<210> 3

<211> 5

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:peptide linker

<400> 3

Gly Gly Gly Gly Ser
1 5

<210> 4

<211> 8

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:peptide linker

<400> 4

Gly Gly Arg Arg Gly Gly Gly Ser
1 5

<210> 5

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:peptide linker

<400> 5

Leu Arg Gln Arg Asp Gly Glu Arg Pro
1 5

<210> 6

<211> 12

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:peptide linker

<400> 6

Leu Arg Gln Lys Asp Gly Gly Gly Ser Glu Arg Pro
1 5 10

<210> 7
 <211> 16
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:peptide linker

<400> 7
 Leu Arg Gln Lys Asp Gly Gly Gly Ser Gly Gly Gly Ser Glu Arg Pro
 1 5 10 15

<210> 8
 <211> 85
 <212> PRT
 <213> Mus sp.

<220>
 <223> DNA binding domain of mouse transcription factor
 Zif268

<400> 8
 Tyr Ala Cys Pro Val Glu Ser Cys Asp Arg Arg Phe Ser Arg Ser Asp
 1 5 10 15

 Glu Leu Thr Arg His Ile Arg Ile His Thr Gly Gln Lys Pro Phe Gln
 20 25 30

 Cys Arg Ile Cys Met Arg Asn Phe Ser Arg Ser Asp His Leu Thr Thr
 35 40 45

 His Ile Arg Thr His Thr Gly Glu Lys Pro Phe Ala Cys Asp Ile Cys
 50 55 60

 Gly Arg Lys Phe Ala Arg Ser Asp Glu Arg Lys Arg His Thr Lys Ile
 65 70 75 80

 His Leu Arg Gln Lys
 85

<210> 9
 <211> 94
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:amino acids
 531-624 in Sp-1 transcription factor

<400> 9
 Pro Gly Lys Lys Lys Gln His Ile Cys His Ile Gln Gly Cys Gly Lys
 1 5 10 15

 Val Tyr Gly Lys Thr Ser His Leu Arg Ala His Leu Arg Trp His Thr
 20 25 30

 Gly Glu Arg Pro Phe Met Cys Thr Trp Ser Tyr Cys Gly Lys Arg Phe
 35 40 45

Thr Arg Ser Asp Glu Leu Gln Arg His Lys Arg Thr His Thr Gly Glu
50 55 60

Lys Lys Phe Ala Cys Pro Glu Cys Pro Lys Arg Phe Met Arg Ser Asp
65 70 75 80

His Leu Ser Lys His Ile Lys Thr His Gln Asn Lys Lys Gly
85 90

<210> 10
<211> 98
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:Sp-1
transcription factor consensus sequence

<400> 10
Met Glu Lys Leu Arg Asn Gly Ser Gly Asp Pro Gly Lys Lys Lys Gln
1 5 10 15
His Ala Cys Pro Glu Cys Gly Lys Ser Phe Ser Lys Ser Ser His Leu
20 25 30
Arg Ala His Gln Arg Thr His Thr Gly Glu Arg Pro Tyr Lys Cys Pro
35 40 45
Glu Cys Gly Lys Ser Phe Ser Arg Ser Asp Glu Leu Gln Arg His Gln
50 55 60
Arg Thr His Thr Gly Glu Lys Pro Tyr Lys Cys Pro Glu Cys Gly Lys
65 70 75 80
Ser Phe Ser Arg Ser Asp His Leu Ser Lys His Gln Arg Thr His Gln
85 90 95

Asn Lys

<210> 11
<211> 10
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:natural Zif268
binding site

<400> 11
gcgtgggcgc

10

<210> 12
<211> 10
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:target site
containing three D-able subsites

<400> 12

ggntgngggn

10

<210> 13

<211> 10

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:target site
with two overlapping D-able subsites

<400> 13

nngkngknnn

10

<210> 14

<211> 10

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:target site
with three overlapping D-able subsites

<400> 14

nngkngkngk

10

<210> 15

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:target site DNA
motif searched by protocol 1

<220>

<221> modified_base

<222> (1)..(22)

<223> n = g, a, c or t

<220>

<221> modified_base

<222> (10)..(12)

<223> n = g, a, c or t, may be present or absent

<400> 15

gnggnngnnn nngnggnngn nn

22

<210> 16

<211> 23

<212> DNA

<213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 1

<220>
 <221> modified_base
 <222> (1)..(23)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (11)..(13)
 <223> n = g, a, c or t, may be present or absent

<400> 16
 gnggnngnnn nnnngnggngg nnn

23

<210> 17
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 1

<220>
 <221> modified_base
 <222> (1)..(22)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (10)..(12)
 <223> n = g, a, c or t, may be present or absent

<400> 17
 gnggnngnnn nngnngnggn nn

22

<210> 18
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 1

<220>
 <221> modified_base
 <222> (1)..(23)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (11)..(13)
 <223> n = g, a, c or t, may be present or absent

<400> 18
gnggnngnnn nnnngngngg nnn

23

<210> 19
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:target site DNA
motif searched by protocol 1

<220>
<221> modified_base
<222> (1)..(22)
<223> n = g, a, c or t

<220>
<221> modified_base
<222> (10)..(12)
<223> n = g, a, c or t, may be present or absent

<400> 19
gnggnngnnn nngngngngn gg

22

<210> 20
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:target site DNA
motif searched by protocol 1

<220>
<221> modified_base
<222> (1)..(23)
<223> n = g, a, c or t

<220>
<221> modified_base
<222> (11)..(13)
<223> n = g, a, c or t, may be present or absent

<400> 20
gnggnngnnn nnnngngngg ngg

23

<210> 21
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:target site DNA
motif searched by protocol 1

<220>
 <221> modified_base
 <222> (1)..(22)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (10)..(12)
 <223> n = g, a, c or t, may be present or absent

<400> 21
 gnnngnggnnn nngnggngnn nn

22

<210> 22
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 1

<220>
 <221> modified_base
 <222> (1)..(23)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (11)..(13)
 <223> n = g, a, c or t, may be present or absent

<400> 22
 gnnngnggnnn nnnngnggngg nnn

23

<210> 23
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 1

<220>
 <221> modified_base
 <222> (1)..(22)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (10)..(12)
 <223> n = g, a, c or t, may be present or absent

<400> 23
 gnnngnggnnn nngnnngnggn nn

22

<210> 24
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 1

<220>

<221> modified_base

<222> (1)..(23)

<223> n = g, a, c or t

<220>

<221> modified_base

<222> (11)..(13)

<223> n = g, a, c or t, may be present or absent

<400> 24

gnngngggnnn nnnngnnngngg nnn

23

<210> 25

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 1

<220>

<221> modified_base

<222> (1)..(22)

<223> n = g, a, c or t

<220>

<221> modified_base

<222> (10)..(12)

<223> n = g, a, c or t, may be present or absent

<400> 25

gnngngggnnn nngnggngn gg

22

<210> 26

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 1

<220>

<221> modified_base

<222> (1)..(23)

<223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (11)..(13)
 <223> n = g, a, c or t, may be present or absent

<400> 26
 gnngngggnnn nnnngnggng ngg

23

<210> 27
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 1

<220>
 <221> modified_base
 <222> (1)..(23)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (11)..(13)
 <223> n = g, a, c or t, may be present or absent

<400> 27
 gnngngnggg nnnngnggng nnn

23

<210> 28
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 1

<220>
 <221> modified_base
 <222> (1)..(24)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (12)..(14)
 <223> n = g, a, c or t, may be present or absent

<400> 28
 gnngngnggg nnnngngggn gnnn

24

<210> 29
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 1

<220>
 <221> modified_base
 <222> (1)..(23)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (11)..(13)
 <223> n = g, a, c or t, may be present or absent

<400> 29
 gnnngnnnggg nnnngnnnggg nnn

23

<210> 30
 <211> 24
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 1

<220>
 <221> modified_base
 <222> (1)..(24)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (12)..(14)
 <223> n = g, a, c or t, may be present or absent

<400> 30
 gnnngnnnggg nnnngnnngng gnnn

24

<210> 31
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 1

<220>
 <221> modified_base
 <222> (1)..(23)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (11)..(13)
 <223> n = g, a, c or t, may be present or absent

<400> 31
gnngnngngg nnnngnggng ngg

23

<210> 32
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:target site DNA
motif searched by protocol 1

<220>
<221> modified_base
<222> (1)..(24)
<223> n = g, a, c or t

<220>
<221> modified_base
<222> (12)..(14)
<223> n = g, a, c or t, may be present or absent

<400> 32
gnngnngngg nnnngngggn gngg

24

<210> 33
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:target site DNA
motif searched by protocol 1

<220>
<221> modified_base
<222> (1)..(19)
<223> n = g, a, c or t

<400> 33
gnngnngngg nggnngnnn

19

<210> 34
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:target site DNA
motif searched by protocol 1

<220>
<221> modified_base
<222> (1)..(19)
<223> n = g, a, c or t

<400> 34
gnngnngngg nngngnnn

19

<210> 35
 <211> 19
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 1

<220>

<221> modified_base
 <222> (1)..(19)
 <223> n = g, a, c or t

<400> 35

gnngnngngg nngnngngg

19

<210> 36

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 2

<220>

<221> modified_base
 <222> (1)..(22)
 <223> n = g, a, c or t

<220>

<221> modified_base
 <222> (10)..(12)
 <223> n = g, a, c or t, may be present or absent

<400> 36

knngnnknnn nnknngnnkn nn

22

<210> 37

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 2

<220>

<221> modified_base
 <222> (1)..(23)
 <223> n = g, a, c or t

<220>

<221> modified_base
 <222> (11)..(13)
 <223> n = g, a, c or t, may be present or absent

<400> 37
knggnnknnn nnnknggnnk nnn

23

<210> 38
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:target site DNA
motif searched by protocol 2

<220>
<221> modified_base
<222> (1)..(22)
<223> n = g, a, c or t

<220>
<221> modified_base
<222> (10)..(12)
<223> n = g, a, c or t, may be present or absent

<400> 38
knggnnknnn nnknknnggn nn

22

<210> 39
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:target site DNA
motif searched by protocol 2

<220>
<221> modified_base
<222> (1)..(23)
<223> n = g, a, c or t

<220>
<221> modified_base
<222> (11)..(13)
<223> n = g, a, c or t, may be present or absent

<400> 39
knggnnknnn nnnknknngg nnn

23

<210> 40
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:target site DNA
motif searched by protocol 2

<220>
 <221> modified_base
 <222> (1)..(22)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (10)..(12)
 <223> n = g, a, c or t, may be present or absent

<400> 40
 knngnnknnn nnknnknnkn gg

22

<210> 41
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 2

<220>
 <221> modified_base
 <222> (1)..(23)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (11)..(13)
 <223> n = g, a, c or t, may be present or absent

<400> 41
 knngnnknnn nnnknnknnk ngg

23

<210> 42
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 2

<220>
 <221> modified_base
 <222> (1)..(22)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (10)..(12)
 <223> n = g, a, c or t, may be present or absent

<400> 42
 knnkngggnn nnkngggnkn nn

22

<210> 43
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 2

<220>

<221> modified_base

<222> (1)..(23)

<223> n = g, a, c or t

<220>

<221> modified_base

<222> (11)..(13)

<223> n = g, a, c or t, may be present or absent

<400> 43

knnknnggnnn nnnknnggnnk nnn

23

<210> 44

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 2

<220>

<221> modified_base

<222> (1)..(22)

<223> n = g, a, c or t

<220>

<221> modified_base

<222> (10)..(12)

<223> n = g, a, c or t, may be present or absent

<400> 44

knnknnggnnn nnknknnggn nn

22

<210> 45

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 2

<220>

<221> modified_base

<222> (1)..(23)

<223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (11)..(13)
 <223> n = g, a, c or t, may be present or absent

<400> 45
 knnknggnnn nnnknnkngg nnn

23

<210> 46
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 2

<220>
 <221> modified_base
 <222> (1)..(22)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (10)..(12)
 <223> n = g, a, c or t, may be present or absent

<400> 46
 knnknggnnn nnknnknnkn gg

22

<210> 47
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 2

<220>
 <221> modified_base
 <222> (1)..(23)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (11)..(13)
 <223> n = g, a, c or t, may be present or absent

<400> 47
 knnknggnnn nnnknnknnk ngg

23

<210> 48
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 2

<220>
 <221> modified_base
 <222> (1)..(22)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (11)..(12)
 <223> n = g, a, c or t, may be present or absent

<400> 48
 knnknnknngg nnknnggnkn nn

22

<210> 49
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 2

<220>
 <221> modified_base
 <222> (1)..(23)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (12)..(13)
 <223> n = g, a, c or t, may be present or absent

<400> 49
 knnknnknngg nnnknnggnkn nnn

23

<210> 50
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 2

<220>
 <221> modified_base
 <222> (1)..(22)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (11)..(12)
 <223> n = g, a, c or t, may be present or absent

<400> 50
knnknnkngg nnknnknggn nn

22

<210> 51
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:target site DNA
motif searched by protocol 2

<220>
<221> modified_base
<222> (1)..(23)
<223> n = g, a, c or t

<220>
<221> modified_base
<222> (12)..(13)
<223> n = g, a, c or t, may be present or absent

<400> 51
knnknnkngg nnnknnkngg nnn

23

<210> 52
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:target site DNA
motif searched by protocol 2

<220>
<221> modified_base
<222> (1)..(22)
<223> n = g, a, c or t

<220>
<221> modified_base
<222> (11)..(12)
<223> n = g, a, c or t, may be present or absent

<400> 52
knnknnkngg nnknnknnkn gg

22

<210> 53
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:target site DNA
motif searched by protocol 2

<220>
 <221> modified_base
 <222> (1)..(23)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (12)..(13)
 <223> n = g, a, c or t, may be present or absent

<400> 53
 knnknnknngg nnnknnknnk ngg

23

<210> 54
 <211> 19
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 2

<220>
 <221> modified_base
 <222> (1)..(19)
 <223> n = g, a, c or t

<400> 54
 knnknnknngg nggnnknnn

19

<210> 55
 <211> 19
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 2

<220>
 <221> modified_base
 <222> (1)..(19)
 <223> n = g, a, c or t

<400> 55
 knnknnknngg nnknnggnnn

19

<210> 56
 <211> 19
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 2

<220>
 <221> modified_base
 <222> (1)..(19)
 <223> n = g, a, c or t

<400> 56
 knnknnknngg nnknnknngg

19

<210> 57
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 3

<220>
 <221> modified_base
 <222> (1)..(22)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (10)..(12)
 <223> n = g, a, c or t, may be present or absent

<400> 57
 kngknnknnn nnkngknnkn nn

22

<210> 58
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 3

<220>
 <221> modified_base
 <222> (1)..(23)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (11)..(13)
 <223> n = g, a, c or t, may be present or absent

<400> 58
 kngknnknnn nnnkngknnk nnn

23

<210> 59
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 3

<220>
 <221> modified_base
 <222> (1)..(22)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (10)..(12)
 <223> n = g, a, c or t, may be present or absent

<400> 59
 kngknnknnn nnknnkngkn nn

22

<210> 60
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 3

<220>
 <221> modified_base
 <222> (1)..(23)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (11)..(13)
 <223> n = g, a, c or t, may be present or absent

<400> 60
 kngknnknnn nnnknnkngk nnn

23

<210> 61
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 3

<220>
 <221> modified_base
 <222> (1)..(22)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (10)..(12)
 <223> n = g, a, c or t, may be present or absent

<400> 61
kngknnknnn nnknnknnkn gk

22

<210> 62
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:target site DNA
motif searched by protocol 3

<220>
<221> modified_base
<222> (1)..(23)
<223> n = g, a, c or t

<220>
<221> modified_base
<222> (11)..(13)
<223> n = g, a, c or t, may be present or absent

<400> 62
kngknnknnn nnnknnknnk ngk

23

<210> 63
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:target site DNA
motif searched by protocol 3

<220>
<221> modified_base
<222> (1)..(22)
<223> n = g, a, c or t

<220>
<221> modified_base
<222> (10)..(12)
<223> n = g, a, c or t, may be present or absent

<400> 63
knnkngknnn nnkngknnkn nn

22

<210> 64
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:target site DNA
motif searched by protocol 3

<220>
 <221> modified_base
 <222> (1)..(23)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (11)..(13)
 <223> n = g, a, c or t, may be present or absent

<400> 64
 knnkngknnn nnnkngknnk nnn

23

<210> 65
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 3

<220>
 <221> modified_base
 <222> (1)..(22)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (10)..(12)
 <223> n = g, a, c or t, may be present or absent

<400> 65
 knnkngknnn nnknnkngkn nn

22

<210> 66
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 3

<220>
 <221> modified_base
 <222> (1)..(23)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (11)..(13)
 <223> n = g, a, c or t, may be present or absent

<400> 66
 knnkngknnn nnnknnkngk nnn

23

<210> 67
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 3

<220>
 <221> modified_base
 <222> (1)..(22)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (10)..(12)
 <223> n = g, a, c or t, may be present or absent

<400> 67
 knnkngknnn nnknknknkn gk

22

<210> 68
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 3

<220>
 <221> modified_base
 <222> (1)..(23)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (11)..(13)
 <223> n = g, a, c or t, may be present or absent

<400> 68
 knnkngknnn nnnknknknk ngk

23

<210> 69
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 3

<220>
 <221> modified_base
 <222> (1)..(22)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (11)..(12)
 <223> n = g, a, c or t, may be present or absent

<400> 69
 knnknnkngk nnkngknnkn nn

22

<210> 70
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 3

<220>
 <221> modified_base
 <222> (1)..(23)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (12)..(13)
 <223> n = g, a, c or t, may be present or absent

<400> 70
 knnknnkngk nnnkngknnk nnn

23

<210> 71
 <211> 22
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site DNA
 motif searched by protocol 3

<220>
 <221> modified_base
 <222> (1)..(22)
 <223> n = g, a, c or t

<220>
 <221> modified_base
 <222> (11)..(12)
 <223> n = g, a, c or t, may be present or absent

<400> 71
 knnknnkngk nnknnkngkn nn

22

<210> 72
 <211> 23
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:target site DNA
motif searched by protocol 3

<220>

<221> modified_base

<222> (1)..(23)

<223> n = g, a, c or t

<220>

<221> modified_base

<222> (12)..(13)

<223> n = g, a, c or t, may be present or absent

<400> 72

knnknnkngk nnnknnkngk nnn

23

<210> 73

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:target site DNA
motif searched by protocol 3

<220>

<221> modified_base

<222> (1)..(22)

<223> n = g, a, c or t

<220>

<221> modified_base

<222> (11)..(12)

<223> n = g, a, c or t, may be present or absent

<400> 73

knnknnkngk nnknnknnkn gk

22

<210> 74

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:target site DNA
motif searched by protocol 3

<220>

<221> modified_base

<222> (1)..(23)

<223> n = g, a, c or t

<220>

<221> modified_base

<222> (12)..(13)

<223> n = g, a, c or t, may be present or absent

<400> 74
knnknnkngk nnnknnknnk ngk

23

<210> 75
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:target site DNA
motif searched by protocol 3

<220>
<221> modified_base
<222> (1)..(19)
<223> n = g, a, c or t

<400> 75
knnknnkngk ngknnknnn

19

<210> 76
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:target site DNA
motif searched by protocol 3

<220>
<221> modified_base
<222> (1)..(19)
<223> n = g, a, c or t

<400> 76
knnknnkngk nnkngknnn

19

<210> 77
<211> 19
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:target site DNA
motif searched by protocol 3

<220>
<221> modified_base
<222> (1)..(19)
<223> n = g, a, c or t

<400> 77
knnknnkngk nnknnkngk

19

<210> 78
 <211> 10
 <212> DNA
 <213> Glycine max

<220>

<223> soybean FAD2-1 cDNA ZFP target segment FAD 1

<400> 78
 gaggtagagg

10

<210> 79
 <211> 10
 <212> DNA
 <213> Glycine max

<220>

<223> soybean FAD2-1 cDNA target segment FAD 2

<400> 79
 gtcgtgtgga

10

<210> 80
 <211> 10
 <212> DNA
 <213> Glycine max

<220>

<223> soybean FAD2-1 cDNA target segment FAD 3

<400> 80
 gttgaggaag

10

<210> 81
 <211> 10
 <212> DNA
 <213> Glycine max

<220>

<223> soybean FAD2-1 cDNA target segment FAD 4

<400> 81
 gaggtggaag

10

<210> 82
 <211> 10
 <212> DNA
 <213> Glycine max

<220>

<223> soybean FAD2-1 cDNA target segment FAD 5

<400> 82
 taggtggtga

10

<210> 83
 <211> 12
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:test sequence

<400> 83
 agtgcgcggt gc 12

<210> 84
 <211> 10
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site
 with base immediately to the 3' side of target
 site

<400> 84
 agtgcgcggt 10

<210> 85
 <211> 10
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site
 with base immediately to the 3' side of target
 site

<400> 85
 gtgcgcggtg 10

<210> 86
 <211> 10
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:target site
 with base immediately to the 3' side of target
 site

<400> 86
 tgcgcggtgc 10

<210> 87
 <211> 10
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:target site
with base immediately to the 3' side of target
site

<220>

<221> modified_base

<222> (10)

<223> n = undefined

<400> 87

gcgcggtgcn

10

<210> 88

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:finger F3 for
ordered output from optimal design target site

<400> 88

Glu Arg Asp His Leu Arg Thr

1

5

<210> 89

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:finger F2 for
ordered output from optimal design target site

<400> 89

Arg Ser Asp Glu Leu Gln Arg

1

5

<210> 90

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:finger F1 for
ordered output from optimal design target site

<400> 90

Arg Lys Asp Ser Leu Val Arg

1

5

<210> 91

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: finger for
disordered output from optimal design target site

<400> 91

Arg Ser Asp Glu Leu Thr Arg
1 5

<210> 92

<211> 7

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: finger for
disordered output from optimal design target site

<400> 92

Arg Ser Asp Glu Arg Lys Arg
1 5

<210> 93

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: three finger
ZFP design using F3, F2 and F1 fingers for ordered
output from optimal design target site

<400> 93

Arg Lys Asp Ser Leu Val Arg Arg Ser Asp Glu Leu Gln Arg Glu Arg
1 5 10 15

Asp His Leu Arg Thr
20

<210> 94

<211> 21

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: ZFP sequence
(F1, F2 and F3) from SBS design GR-223

<400> 94

Arg Ser Ala Asp Leu Thr Arg Arg Ser Asp His Leu Thr Arg Glu Arg
1 5 10 15

Asp His Leu Arg Thr
20

<210> 95
 <211> 21
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:ZFP sequence
 (F1, F2 and F3) from Zif 268

<400> 95
 Arg Ser Asp Glu Leu Thr Arg Arg Ser Asp His Leu Thr Thr Arg Ser
 1 5 10 15

Asp Glu Arg Lys Arg
 20

<210> 96
 <211> 21
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:ZFP sequence
 (F1, F2, F3) from SP1

<400> 96
 Lys Thr Ser His Leu Arg Ala Arg Ser Asp Glu Leu Gln Arg Arg Ser
 1 5 10 15

Asp His Leu Ser Lys
 20

<210> 97
 <211> 21
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence:ZFP sequence
 (F1, F2, F3) from SBS design GL-8.3.1

<400> 97
 Arg Lys Asp Ser Leu Val Arg Thr Ser Asp His Leu Ala Ser Arg Ser
 1 5 10 15

Asp Asn Leu Thr Arg
 20